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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,994	11/06/2006	Claus-Rupert Hohenthanner	Umicore 0154-US	5920
23719 7590 01/25/2010 KALOW & SPRINGUT LLP 488 MADISON AVENUE 19TH FLOOR NEW YORK, NY 10022			EXAMINER YANCHUK, STEPHEN J	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 01/25/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,994	Applicant(s) HOENTHANNER ET AL.	
	Examiner STEPHEN YANCHUK	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 19-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 19-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 11-17 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method species, there being no allowable generic or linking claim. Election was made **with** traverse in the reply filed on 10/08/2009. Group I has a common technical inventive concept pertaining to the specifics of how the foil support is created and used. Group II pertains to the common technical concept of forming a layered structure.
2. The applicant's argument that Puffer is not prior art due to improper date is found non-persuasive. Puffer was provisionally filed Aug 30, 2002 and contains the information relied upon.
3. Communication with John Stantalone was made on January 14, 2010 to notify the proper groups should have been Group I :Claims 1-10 and Group II: Claim 1 & 11-18 and Group III: Claim 19-20 whereby group III should be joined with either Group I or Group II. The common technical information relied upon and taught by the prior art is contained in Claim 1 which each group shares.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-4, 6-10, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al (PGPUB 2002/0064593) and further in view of Puffer et al (PGPUB 2005/0281981).

Claims 1 and 3 are rejected by Kohler teaching the process steps of having an unsupported polymer electrolyte membrane (PEM) supported on one surface by a backing film (support foil) (Instant claim 12) [Paragraph 20]. The first, non-backing side, is layered with a composite of first catalyst layer and the first water repellent gas distribution layer (GDL) [Paragraph 20]. The backing is then removed [Paragraph 23]. The side where the backing is removed is processed to have a composite of a second catalyst and gas distribution layer [Paragraph 24]. The first GDL acts as the backing (support foil) while the opposite layer is being processed [Paragraph 20], which shows that a support backing is present at all steps of fabrication. It is taught that inks which contain organic solvents are advantageous to use to apply the catalyst layer for all process steps [Paragraph 28]. The PEM with layer on each side (3-layer catalyst-coated polymer) is dried after fabrication [Paragraph 29]. Kohler teaches that the support foil can be the GDL-catalyst layer [Paragraph 20], but fails to teach a perforated support foil.

Puffer teaches the methods for facilitating the fabrication of devices having thin film materials [Abstract]. He teaches that perforations can be added to the process steps at any time during the process [Paragraph 57]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of perforating the

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thin film material during the electrode-membrane-electrode assembly because Puffer teaches solutions for problems in handling and assembly of MEAs and electrodes [Paragraph 4].

Claims 2 and 20 are rejected by figure 3 which shows an apparatus for continuous fabrication of the 3-layered PEM. It is also taught that the laminate of membrane, catalyst layers, and GDL are strip-shaped (tape form) [Paragraph 62].

Claims 4 and 14 are rejected by the teaching of a sealing of the peripheral edge zone of the MEA, between the MEA and the backing (foil) layer (R) [Paragraph 63]. This sealing is done by the impregnation with a polymer or adhesive [Paragraph 63].

Claims 6 and 7 are rejected by the teaching of MEAs being made of polyetherketones or polybenzimidazoles of thickness 10-200um [Paragraph 3].

Claims 8 and 9 are rejected by the teaching of the backing film (Foil) being made of polyester of thickness 50-100um [Paragraph 20].

Claim 10 is rejected by the teaching of printing, brushing, or spraying being methods to apply the catalyst layer [Paragraph 19].

Claim 19 is rejected by the statement that MEAs are used for fuel cells which is a type of electrochemical device [Paragraph 6-7].

3. Claims 4, 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al (PGPUB 2002/0064593) and Puffer et al (PGPUB 2005/0281981) as applies to claim 1 and further in view of Yoshitake (JP 2001/160405).

Kohler and Puffer teach a process for forming a catalyst-coated polymer electrolyte membrane. The references fail to teach the specifics of the foil.

Yoshitake teaches a direct catalyst ink solvent being applied to an ion-exchange membrane (PEM), wherein the membrane is fixed to a base material (Foil) [Paragraph 21]. A catalyst-membrane is formed on the opposite side of the base material [Paragraph 21]. The base material is exfoliated (removed) [Paragraph 21]. A Post-it cover tape is placed over the newly created membrane, and then a second catalyst-membrane layer is produced in its place [Paragraph 21]. The Post-it cover tape is lifted from the device [Paragraph 21]. Drying steps are used after the catalyst-membrane layers are formed [Paragraph 21]. It would have been obvious for one of ordinary skill in the art to combine Yoshitake with Kohler and Puffer because Yoshitake teaches a high-output polymer fuel cell electrolyte wherein wrinkles do not occur [Paragraph 6].

Claim 4 is rejected by the teaching of a lamination process to fix the membrane to the supporting foil [Paragraph 30].

Claims 6 and 7 are rejected by the teaching of PET, polyolefine, tetrafluoroethylene/ethylene copolymer or polyimide being used as the support foil [Paragraph 17] at a thickness of 50-250um [Paragraph 14,30].

Claims 8 and 9 are rejected by the teaching of the thickness of the ion-exchange resin being 50 um [Paragraph 30] and comprising perfluorinatedsulphonic acid compositions (Paragraph 27, 30, 32).

Claim 10 is rejected by the teaching of screen printing being employed to add the catalyst layer to the product [Paragraph 20].

Claim 19 is rejected by the teaching of the MEA applied for fuel cells [Paragraph 1, 29].

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al (PGPUB 2002/0064593) and Puffer et al (PGPUB 2005/0281981) as applies to claim 1, and further in view of Gestermann et al (PGPUB 2003/0162081 and WO2001/093353).

Kohler and Puffer teach an assembly of a 3-layer PEM but fail to teach a layer that has holes of diameter between .2mm and 3mm and 5-20 holes per square cm.

Gestermann teaches a gas diffusion electrode of 3-layer design wherein the electrode comprises a catalyst support sheet having slots of .3mm [Paragraph 68]. It would have been obvious to construct the 3-layer of Kohler and Puffer using a support foil of Gestermann because Gestermann teaches dimensionally stable gas diffusion electrodes with increased catalyst interlocking [Paragraph 7-9].

The limitation of "comprising 5-20 holes per square centimeter" does not preclude a layer that has more than 5-20 holes per square centimeter because a layer that has 100 holes comprises 20 holes (as an example). Also this limitation is overcome by MPEP 2144.04 IV A.

Response to Arguments

Applicant's arguments to the validity of Puffer is found not persuasive since Puffer was provisionally filed as 60/407115 on Aug. 20, 2002. The information relied upon was contained in this filing and therefore gains priority to this date.

The applicant's argument to the effect of a "perforated foil" reducing wrinkles does not hold value since that advantage has not been claimed.

This action is made final since claim 1 was not amended and arguments revolve primarily around Puffer not being applicable.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is

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(571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795